

REMARKS

Claims 1-6, 8-23, and 25-30 remain pending in the instant application. All claims presently stand rejected. Claims 1, 3, 12, 13, and 20 are amended herein. Claims 7 and 24 are hereby cancelled without prejudice. Entry of this amendment and reconsideration of the pending claims are respectfully requested.

Claim Rejections – 35 U.S.C. § 103

Claims 1-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Geva et al. (US 6,437,372 B1) in view of Glogovsky et al. (US 6,895,134 B2).

Amended independent claim 1 now recites, in pertinent part,

an insulating region disposed in the semiconductor layer surrounding the active region in the semiconductor layer, the **insulating region electrically isolating the active region of the optical waveguide from a passive region of the optical waveguide** disposed in the semiconductor layer, the **passive region of the optical waveguide optically coupled to the active region of the optical waveguide through a portion of the insulating region to pass an optical signal...**

Applicants respectfully submit that there is insufficient motivation to combination Geva and Glogovsky pursuant to M.P.E.P. § 2143.01. Furthermore, even if Geva and Glogovsky are inappropriately combined, the combination fails to teach or suggest all elements of the above claim. In particular, the combination of Geva and Glogovsky fails to teach or suggest an insulating region electrically isolating an active region of a waveguide from a passive region of a waveguide. These two independent reasons supporting patentability of the claims are discussed below.

Reason 1 – No Motivation To Combine References

“To establish a prima facie case of obviousness ... there must be some suggestion or motivation ... to modify the reference or to combine reference teachings. M.P.E.P. § 2143.

The Examiner acknowledges that “Geva et al fails to specifically disclose a passive portion of the optical waveguide.” *Office Action* mailed 2/13/06, page 3. However, the Examiner cites Glogovsky as teaching this missing element and states the motivation to combine can be found “[s]ince both Geva et al and Glogovsky et al both disclose optoelectronic devices using PIN structure.” *Id.*

Firstly, the Examiner cites the structure 31, 32, and 33 illustrated in FIG. 2 of Glogovsky as a PIN structure, when in fact structure 31 is a laser source, structure 32 is a modulator, and structure 33 is a semiconductor optical amplifier (“SOA”). These three elements do not form a PIN structure. Nowhere within FIG. 2 are applications able to find a PIN structure. A PIN structure includes a P-doped region adjacent to an intrinsic region, which is adjacent to an N-doped region. Such a structure is not disclosed by Glogovsky in connection with elements 31, 32, and 33. Accordingly, the Examiner has not satisfied the Examiner’s burden to establish a prima facie case of obviousness since the stated motivation is not valid.

Secondly, **“if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.”** M.P.E.P. § 2143.01. Applicants note that FIG. 3 of Geva discloses a cross sectional view of a mesa structure that may emit or receive light from a surface (i.e., surface emitting device with vertical orientation). In contrast, FIG. 2 of Glogovsky illustrates active layers 36 which are edge emitting (i.e., horizontally orientated devices). Combining the mesa structure of Geva with the edge emitting structure of Glogovsky would render the combined device non-functional and therefore unsatisfactory for its intended purpose.

Geva explicitly states that burying layers 305 are intended for transverse optical confinement. *Geva*, col. 4, lines 29-33. Accordingly, if modulator 30 in Glogovsky were replaced with the mesa structure of Geva, then the burying layers 305 would block an optical beam output from laser 31.

Since the Examiner proposed combination of Geva and Glogovsky would render both devices modified ineffective for their stated purposes, there can be no motivation to combine these references pursuant to M.P.E.P. § 2143.01. Accordingly, Applicants request that the instant §103(a) rejections of claims 1, 13, and 20 be withdrawn.

Reason 2 – Combination of Prior Art Does Not Teach All Claim Elements

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All words in a claim must be

considered in judging the patentability of that claim against the prior art.” M.P.E.P. § 2143.03.

The Examiner acknowledges that “Geva et al fails to specifically disclose a passive portion of the optical waveguide.” *Office Action* mailed 2/13/06, page 3. However, the Examiner cites Glogovsky as disclosing this missing element stating, “Glogovsky et al further discloses a passive region of the waveguide disposed in the semiconductor layer, where an optical beam is directed through the passive waveguide to the active region.”

Referring to FIG. 2 of Glogovsky, the active layers 36 of laser 31, modulator 32, and semiconductor optical amplifier (“SOA”) 33 are optically coupled via intervening passive layers 43. However, Glogovsky fails to disclose or teach an “insulating region electrically isolating the active region of the optical waveguide from a passive region of the optical waveguide,” as recited in claim 1. Rather, Glogovsky clearly illustrates active layers 36 physically abutting passive layers and does not disclose, illustrate, or teach an insulating region disposed between the active layers 36 and the passive layers 43.

Since the Examiner has acknowledged that Geva does not even disclose a passive region of a waveguide then Geva cannot possibly teach or suggest an insulating region isolating an active region of a waveguide from a passive region of a waveguide.

Consequently, the combination of Geva and Glogovsky fails to teach or suggest all elements of claim 1, as required under M.P.E.P. § 2143.03. Independent claims 13 and 20 include similar nonobvious elements as independent claim 1. Accordingly, Applicants request that the instant §103(a) rejections of claims 1, 13, and 20 be withdrawn.

Independent Method Claim 13

The Examiner has stated that a “functional ‘wherein’ statement does not define any structure and accordingly cannot serve to distinguish.” *Office Action* mailed 2/13/06, page 2. The M.P.E.P. in fact states,

While features of an **apparatus** may be recited either structurally or functionally, **claims directed to an apparatus** must be distinguished from the prior art in terms of structure rather than function.

M.P.E.P. § 2114 (emphasis added). Accordingly, if functional language necessarily constrains physically structure, then it must be considered and it may be used to distinguish over prior art. At any rate, § 2114 is limited in scope to Apparatus and Article Claims only. Since independent claim 13 is a **method claim**, the Examiner must consider all functional limitations in claim 13 when determining patentability.

Dependent Claims

The dependent claims are nonobvious over the prior art of record for at least the same reasons as discussed above in connection with their respective independent claims, in addition to adding further limitations of their own. Accordingly, Applicants respectfully request that the instant § 103 rejections of the dependent claims be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants believe the applicable rejections have been overcome and all claims remaining in the application are presently in condition for allowance. Accordingly, favorable consideration and a Notice of Allowance are earnestly solicited. The Examiner is invited to telephone the undersigned representative at (206) 292-8600 if the Examiner believes that an interview might be useful for any reason.

CHARGE DEPOSIT ACCOUNT

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a). Any fees required therefore are hereby authorized to be charged to Deposit Account No. 02-2666. Please credit any overpayment to the same deposit account.

Respectfully submitted,

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